

NOTES ON LACTUCA IN WESTERN NORTH AMERICA

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The genus *Lactuca* is represented in western North America by only two or three native species, but several eastern American and Old World species have become established as weeds. Examination of specimens in the University of California Herbarium and the writer's own field observations show that three of these, *Lactuca virosa* L., *L. saligna* L., and *L. muralis* (L.) Fresen., are not listed in the California floras, while a range extension can be reported on a fourth, *L. spicata* (Lam.) Hitchc. In addition, the widespread and unquestionably native western form which has long been recognized as a distinct species, *L. pulchella* (Pursh) DC., is apparently only a geographic variety, or subspecies of the Old World *L. tatarica* (L.) C. A. Mey. The present paper is a discussion of these findings.

LACTUCA TATARICA (L.) C. A. Mey. subsp. *pulchella* (Pursh) comb. nov. *Sonchus pulchellus* Pursh, Fl. Am. Sept. 2: 502. 1814. *Lactuca pulchella* DC., Prodr. 7: 134. 1843. *Mulgedium pulchellum* Nutt. Trans. Am. Phil. Soc. n.s. 7: 441. 1840; Torr. et Gray, Fl. N. Amer. 2: 497. 1843.

The fact that the American form generally recognized as *Lactuca pulchella* is not specifically different from *L. tatarica* was first recognized by Lindberg (4). He found the two "species" recorded in Lindman's Swedish flora as adventive plants in Sweden, and placed in different genera, that is *Mulgedium tataricum* and *Lactuca pulchella*. The chief differences suggested by Lindman were in the achenes and the pappus. Lindberg investigated these and other characteristics in a series of twenty-four specimens of the Old World *L. tatarica* from various localities and six of *L. pulchella* from North America, and concluded that the two series were identical.

The writer has compared the fifty-four specimens of *Lactuca pulchella* from the University of California Herbarium with a series of fifteen specimens of *L. tatarica*, most of which were received on loan from the United States National Herbarium through the kindness of its curator. The majority of these are from northwestern India, but three are from Mongolia, one is from northern China, and one (University of California Herbarium) from southern Europe. This comparison confirms in general the opinion of Lindberg. In their corollas, anthers, stigmas, and achenes the two forms are identical. The variation in achene shape of the Old World form as illustrated by Lindberg (4, p. 657) is exactly matched in the series that the writer has seen from America. There are, however, certain differences in habit, as follows. The stems of *L. tatarica* subsp. *pulchella* average slightly taller than those of the Old World *L. tatarica*, and

are less branched, while the cauline leaves, as noted by Lindberg, are more numerous (10 to 30 below the lowest branch of the inflorescence in subsp. *pulchella*, 3 to 12 in the Old World form). The leaves are similar in size, shape, and texture in the two forms, and in both may be either entire or pinnatifid. The leaf margins in subsp. *pulchella* are quite entire or remotely and minutely denticulate, while in all the Old World specimens seen by the writer they are conspicuously spinulose-denticulate. Lindberg, however, cites a collection by Sintenis from Aschabad with entire leaves. The involucreal bracts are usually more closely imbricated in subsp. *pulchella* than in the typical form, while their tips tend to be narrower and more attenuate. One specimen from California, however (Warner Mts., Modoc County, *Frost 112*), exactly matches the Indian, Mongolian, and Chinese specimens in this respect.

Although these differences give the two series a sufficiently different aspect so that they can easily be distinguished, there is no characteristic in which overlapping has not been found. Both subspecies occupy somewhat similar habitats; moist, often somewhat saline meadows or sandy stream margins in semiarid, cool temperate steppe country. The typical form, however, apparently grows in somewhat drier situations than does subsp. *pulchella*. In their somatic chromosomes the two are indistinguishable. The somatic number $2n=18$ has already been reported for *Lactuca tatarica* (2), while the same number and a similar karyotype have been seen in root tips of a culture of subsp. *pulchella* grown from seed kindly sent to the writer by Dr. H. Hapeman, Minden, Nebraska. There has been no opportunity to test whether the two forms belong to the same ecospecies as defined by Turesson (cf. Clausen, Keck, and Hiesey, 3). Both set seed very sparingly in Berkeley, so that data on the fertility of hybrids grown in this climate would be meaningless. Judging from the experience in this and other laboratories on hybrids in *Lactuca* and other genera of Cichorieae, the two forms would probably be perfectly interfertile when crossed under suitable growing conditions.

This close similarity between two plants, one characteristic of the steppes of central Asia and one of North America has already been noted by the writer (1, p. 32) and is paralleled by several other species groups. *Lactuca tatarica* has the smallest gap in its distribution of any of these species, since it extends northwestward in the New World to Alaska, and eastward in the Old World to Manchuria. All of its relatives are central Asiatic, with their center of distribution in the Altai-Thian Shan mountain region. The ancestors of subsp. *pulchella*, therefore, probably migrated across the Siberian-Alaskan land bridge during late Pliocene or Pleistocene time.

LACTUCA SPICATA (Lam.) Hitchc. The occurrence of this species in California was predicted as early as 1876 by Gray (Bot. Calif. 1: 442). It is now recorded from the following localities: Olema, Marin County, *T. S. Brandegee*; south of Eureka, Humboldt County, *M. E. Jones 29090*; Trinity River Valley, Humboldt County, alt. 200 m., *Tracy 7746, 14118*; near Myers, Humboldt County, *Tracy 13583*.

It is apparently rare or local in the redwood forest. Mr. Joseph P. Tracy, who discovered all of the exactly known localities for *Lactuca spicata*, has written (in litt.) that it appears as if it were native, but the possibility of its introduction from farther east cannot be excluded, since the species in eastern America readily spreads to forest clearings and other habitats more or less remote from human habitation. There are no discernible differences between the California specimens and those from the east.

LACTUCA MURALIS (L.) Fresen. (*Mycelis muralis* Reichenb.; *Cicerbita muralis* Wallr.)

This European species is apparently introduced on Vancouver Island, British Columbia, as evidenced by the following collection: Sooke Harbor, 1930, *Setchell and Parks*. It is a very distinctive woodland species with thin, often purplish, lyrate or runcinate-pinnatifid and angulate-toothed leaves and ample panicles of small heads. The involucre bracts are biseriate, with the outer series calyculate as in *Prenanthes*; they enclose five yellow florets. The achenes are deep brownish or reddish, conspicuously flattened, and bear a pale, not filiform beak about one-fifth their length.

LACTUCA VIROSA L. This species, which has often been erroneously reported from the United States through misidentification of the quite different *L. Scariola* L. var. *integrata* Gren. et Godr., is now well established in the vicinity of Berkeley. It differs from all forms of *L. Scariola* in its biennial habit, more strongly dentate leaves, and in particular by its larger corollas and very different achenes. The latter are, in *L. virosa*, black, rugose but not setose, and conspicuously wing-margined, while in *L. Scariola* they are gray or brownish, narrower, minutely rugose on the ribs below but setose above, and marginless. The stem leaves of *L. virosa* are usually entire or less markedly pinnatifid than are those of typical *L. Scariola*, but this difference is not pronounced, so that emphasis on it has led to considerable confusion.

Usually *Lactuca virosa* does not become a field or roadside weed as does *L. Scariola*, but prefers half-wild places, often growing in rock crevices. Its large rosettes of obovate, spinulose-toothed leaves are a conspicuous feature of the winter vegetation of the Berkeley Hills. The writer has frequently seen *L. virosa* and *L. Scariola* growing together but has not found any indication

of natural hybridization between them. The following specimens in the University of California Herbarium may be cited: Campus, Berkeley, *Mason 3642*; Strawberry Canyon, Berkeley, *Parks 0701*.

LACTUCA SALIGNA L. This European weed, although well established for some time in the San Francisco Bay area, has not found its way into the floras. It is distinguished from *L. Scariola* chiefly by its smaller, semi-decumbent habit, narrower leaves, and spike-like inflorescences. It flowers somewhat later than do *L. virosa* and *L. Scariola*. These three European weeds may be identified by the following key:

Plant biennial; achenes black, rugose, conspicuously wing-margined	<i>L. virosa</i>
Plant annual; achenes gray or brownish, minutely rugulose on the ribs below, spiculate or setose toward the apex, not wing-margined.	
Leaves oblong or elliptic in outline, their margins conspicuously spinulose-denticulate; panicle open, with widely spreading branches; involucre with 14-20 florets; achenes setose above.	
Leaves pinnatifid	<i>L. Scariola</i>
Leaves oblong, entire	<i>L. Scariola</i> var. <i>integrata</i>
Leaves linear-lanceolate, or pinnatifid with linear-lanceolate lobes; their margins entire or remotely denticulate; panicle spiciform, with short, ascending branches; involucre with about 8-10 florets; achenes merely spiculate above	<i>L. saligna</i>

LACTUCA SCARIOLA L. The typical form of this species, with pinnatifid leaves, is a common weed throughout western North America.

LACTUCA SCARIOLA var. *INTEGRATA* Gren. et Godr. Although it is much the most common form in the eastern United States, the variety occurs only occasionally in California. It is usually a smaller plant than the pinnatifid-leaved form, and is apparently adapted to a cooler climate and a shorter growing season.

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